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Patent Application

of

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for

AIRCRAFT PASSENGER SEAT

#### Field of the Invention

The present invention relates to an aircraft passenger seat with seat components, such as a seat part and a backrest. The backrest has a support structure which bears the backrest cushioning. A tray table can be folded up onto the backrest and folded away into the position of use. A pocket-like receptacle for holding utensils, especially printed materials and travel accessories is also provided on the backrest.

#### Background of the Invention

Aircraft passenger seats with seat part, backrests, tray tables and receptacles are widely used in conventional passenger aircraft, specifically in airline or charter air transportation. As is recognized, in commercial air transportation for economic reasons a priority objective is to achieve the best possible use of interior cabin space, with as large a number of passenger seats as possible within a given useable space. At the same time, each passenger should have available cabin space sufficient with respect to sitting and/or traveling comfort, as so-called "living space". Known passenger seats do not adequately satisfy the demands to be imposed on adequate "living space"

when seating in the cabin space is tight, as is especially the case in air transportation in economy class.

### Summary of the Invention

An object of the present invention is to provide an aircraft passenger seat which, even for tight seating in the cabin interior, makes available comparatively more room to the passenger.

In an aircraft passenger seat, this object is basically achieved according to the present invention in that a receptacle is formed by a cavity extending in the support structure of the backrest at least partially between the folded-up tray table and the backrest cushioning.

In the present invention, a pocket-like receptacle is located in the long unused internal cavity of the support structure of the backrest. In contrast, known aircraft passenger seats have pocket-like receptacles mounted underneath the tray table in the knee area of the passenger next behind. A larger amount of free space is then provided in the knee area. In the known aircraft passenger seats, especially when they are filled with travel literature, conventional safety instructions and other travel accessories, the receptacles cause a major limitation of the free knee and leg space. This limitation is avoided in the present invention.

Advantageously, in the aircraft passenger seat of the present invention, the receptacle is located in the long unused cavity extending from the area of the top edge of the support structure to the structure element of the support structure. The structure element forms the bottom of the receptacle and is located within the surface area of the folded-up tray table.

In this connection, the cavity for forming the main opening of the receptacle in the area bordering the top edge of the support structure can be open toward the rear. The main opening and accordingly the top edge of the support structure can also be offset down in height by an amount so

that for this purpose in the support structure additional installation space is formed, for example for holding a display screen or the like.

As the rear wall of the pocket which is exposed when the tray table is folded away, the support structure of the backrest above the structure element which forms the bottom of the receptacle has a plate which passes between the two side edges of the support structure and onto which the tray table can be folded.

This plate can have a latch for fixing the tray table in the folded-up position.

Between the lower edge of the plate forming the rear wall of the receptacle and the structure element forming the bottom of the receptacle, a slot-like bottom-side opening of the receptacle can be formed. This opening easily allows removal of small articles which are stored in the receptacle and easy cleaning of the receptacle.

A small projecting lip on the edge of the structure element can border the bottom-side opening of the receptacle to prevent printed material or smaller travel accessories located in the receptacle from slipping out. The support structure can be additionally reinforced by a transversely extending bar underneath the receptacle.

Other objects, advantages and salient features of the present invention will become apparent from the following detailed description, which, taken in conjunction with the annexed drawings, discloses preferred embodiments of the present invention.

#### Brief Description of the Drawings

Referring to the drawings which form a part of this disclosure:

FIG. 1 is a schematically simplified, partially cutaway perspective rear view of a seat row section with three aircraft passenger seats according to the prior art, only the area from their backrests being visible;

FIG. 2 is a schematically simplified, perspective rear view of only the area of the backrest of an aircraft passenger seat according to a first embodiment of the present invention, with the tray table being omitted;

FIG. 3 is a perspective rear view of the backrest only of the embodiment of FIG. 2, enlarged compared to FIG. 2; and

FIG. 4 is a schematically simplified, perspective rear view of an aircraft passenger seat according to a second embodiment of the present invention, with an integrated display screen.

#### Detailed Description of the Invention

FIG. 1 shows a section of a row of seats with three aircraft passenger seats according to the prior art, the area of their backrests being shown. Tray tables 3 are arranged to be able to move in the conventional manner on articulated arms 5, and are shown in FIG. 1 in the non-use position, folded up onto the backrest 1. In this position, the tray tables 3 can be detachably fixed by locking latches 7 configured and made in the conventional manner.

Underneath the tray tables 3 are pocket-like receptacles 9 which, in the known aircraft passenger seats, are made in the form of pockets for printed material as net pockets or pockets with a closed wall. As FIG. 1 shows, these pocket-like receptacles 9, when they are filled with printed material, for example conventional safety instructions for flight operation, with travel accessories, other printed material and the like, bulge to the rear and limit the leg area of the passenger sitting behind, especially in the knee area.

In FIG. 2, the support structure 11 of a backrest 1, according to one exemplary embodiment of the present invention, bears the backrest cushion 13. FIG. 2 shows the backrest 1 generally from its back. For the sake of clarity, the tray table 3 is omitted, which, when it is folded up onto the back of the support structure 11, can be locked by the swiveling latch 7 in the folded-up position. Latch 7 extends in the conventional manner over the top edge of the folded-up tray table 3.

FIG. 3 shows more clearly and on a larger scale the details of the support structure 11. In the support structure 11, the inner cavity extends between the front of the support structure 11 bearing on the backrest cushion 13 and its back in the region in which the tray table 3 can be folded onto the support structure 11 and can be fixed by the latch 7. This inner cavity is used as pocket-like receptacle 15 for holding articles, for example printed material 17. The bottom 19 of the receptacle 15 formed by the cavity is formed by a structure element 21 extending transversely from side edge to side edge of the support structure 11. To prevent articles from falling out of the receptacle 15 when the tray table 3 has been folded away, above the structure element 21 a plate 23 forms the rear wall of the receptacle and extends from side edge to side edge of the support structure 11. This plate 23 bears the movable latch 7 for locking the tray table 3 shown in FIG. 1.

Between the structure element 21 forming the bottom 19 of the receptacle and the plate 23 a distance defines a slot-like opening 25. This bottom-side opening 25 of the receptacle 15 formed by the cavity makes it possible for it to be easily cleaned and smaller accessories to be comfortably removed. To prevent printed material 17 or other articles from unintentionally slipping out, on the edge of the structure element 21 bordering the bottom 19 to the outside, a lip 27 projects slightly in the form of ribs.

In the illustrated exemplary embodiments, the receptacle 15 is an integral component of the backrest support structure 11. Accordingly a type of hard box with stiffly made segment parts of the back rest is implemented for the receptacle 15. For this purpose, the backrest structure in spite of the added receptacle is stiffened as before. For example, in case of a crash, the crash forces

occurring cannot then lead to the seat collapsing, especially in the area of its backrest. The transversely extending, continuous plate 23 between the two side or structure bars of the U-shaped support structure 11 is especially helpful in this connection.

In a second embodiment shown in FIG. 4, the top edge 11a of the support structure 11 in the direction of the tray table 3, which is not detailed, is shifted down by a height. A display screen 31 can then be integrated into the support structure 11. Thus, on the back of the backrest, a uniform surface is attained which in the case of a crash or an impact can reliably accommodate and distribute the body forces which way be applied to minimize the danger of injury for a rear seat occupant.

By eliminating the pocket located underneath the tray table 33 in the knee area of the aircraft passenger seat located directly behind, the aircraft passenger seat of the present invention makes available an enlarged "living space" for the user of the aircraft passenger seat located directly behind. By using the cavity not otherwise used within the support structure 11 of the backrest 1 as the receptacle or pocket for printed material, without having to tolerate the corresponding disadvantages, it becomes possible to implement tighter seating on the pertinent aircraft, and to exploit the corresponding economic advantage.

While various embodiments have been chosen to illustrate the invention, it will be understood by those skilled in the art that various changes and modifications can be made therein without departing from the scope of the invention as defined in the appended claims.

What is claimed is: